

## THE SOCIAL CONSTRUCTION OF HEATING AND COOLING PRACTICES

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**Abstract** *For decades energy has been considered a central element of political strategies, public speeches, a driver for innovation and technology development (not only by trying to find more sustainable sources of energy, but also by trying to increase efficiency of its use). This conference aims at discussing how it is possible to design cities for people and for the planet, combining the needs and expectations of human beings with the constraints posed by the need to make every action sustainable in the short and in the long run.*

*With the present short paper our aim is to highlight how important the design moment is to balance sustainability and human needs.*

*For over four decades human behaviour or as we prefer in our research field, social practices, have been understood as a “non-technical” barrier to a more energy efficient society. A set of tools have been thought of, included in public policies and implemented in a concerted effort to help agents to follow the right path and to assume practices that are widely considered, among political and technical arenas, as rational. Although such an approach has had some difficulties in achieving the expected results, justifications for the failure are usually associated with the mix of measures taken and not as a proof that something is wrong with the initial approach.*

*Using data from in depth interviews to families and energy experts, we try to highlight how building regulations, technology developments and the generalization of access to artificial indoor temperatures may result in increased energy consumption and the disappearance of traditional practices, by creating new needs and a new concept of “normal temperature”.*

### 1. INTRODUCTION

Energy efficiency has become a central element of public policies in the European Union since the seventies. Public policies aimed at influencing households and families to use energy more efficiently were developed and implemented. Such policies usually implied that if citizens or families were empowered to use energy more efficiently, using information and making technological solutions available, sooner or later results would appear. But such a direct effect, except in some specific contexts, has shown to be elusive. At present, in the EU, energy is used more efficiently but results are far less clear than first expected.

Such results (or lack of it) seem to point into a different direction. They highlight the importance of looking at the heart of practices construction. In order to do so, we need to bring into the discussion practice theory, and from there we will try to demonstrate how heating and cooling practices have been influenced by technology and dwellings design and

regulation. Exploring this influence is particularly important in a country like Portugal, where energy use to fulfil such needs is relatively low and traditional practices of cooling and heating a house are still widely used.

## **2. THE CONTRIBUTION OF SOCIAL PRACTICES THEORY TO UNDERSTAND HEATING AND COOLING PRACTICES**

Theory of practice emerged as a theoretical orientation that brings together a wide range of approaches aiming to overcome the classic division between agency or structure as the defining element of human conduct. To Reckwitz a practice is “a routinized type of behavior which consists of several elements, interconnected to one another; forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge (p.249 [1]). In this context, agents are carriers of bodily behaviour patterns and of certain routinized ways of understanding, knowing and wanting, but these are necessary elements and qualities of the practice in which agents participate and not a quality of the agents. Therefore, practices precede agents, since they are a collective and historic event, that is developed through time by all those who get involved in that practice (p.134 [2]).

As for the identification of the key elements to understand practices there are different approaches. In our analysis we will use Kirsten Gram-Hanssen perspective [3], and therefore, to analyse heating and cooling practices we will use four key elements: practical understanding/embodied habits, institutionalized knowledge/rules, engagements/meanings and technologies/material-structures. Practical understanding or embodied habits refers to knowing what to do or how to react to a situation. In this short paper we include in this element of the practices the knowhow of families to use different technologies or solutions to bring about a comfortable indoor temperature. Institutionalized knowledge or rules can be understood as the set of conditions to decide which are the best solutions or to interpret labels on equipments or to decide on investments on refurbishing the house. But keeping a comfortable indoor temperature fulfils certain objectives or ends and has meanings to people, something that also plays a role in structuring the practices. Finally we have technologies or the material structure that provides an important element of the practice. In the last two decades important changes occurred both in technologies and in buildings that have a clear influence on how and when practices are developed.

### 3. METHODOLOGY

In this article we use data from fourteen interviews conducted among families and seventeen interviews with energy experts. The fourteen families were selected from a broader group that was involved in the Ecofamilies Project<sup>i</sup>. When selecting the families to be interviewed there was an effort to guarantee the proximity with the national population, something that was not attained only in the education variable. Variables like the size of the family, the average income, age, type of dwelling and regular practices of efficient energy use were taken under consideration. As for the energy experts, representatives of NGO, of public entities with responsibilities on energy policy (both at the national and local level), academics and university teachers and experts from professional/industrial organizations were interviewed.

### 4. HEATING AND COOLING PRACTICES AND ENERGY USE

Among the families involved in the study we found that heating and cooling practices are still highly dependent on two things: one is the aim of reducing energy costs, the other is the frequent use of traditional actions to keep a comfortable indoor temperature, namely using layers of clothes, blinds, opening and closing windows, drinking cold or hot drinks, etc., a practical knowledge that was passed on by the previous generations (parents and grandparents). If for some, traditional actions that allow for less energy intensive practices to keep a comfortable indoor temperature are accepted as the right way to address the need for comfort, for others, they are used only as a mean to keep household energy costs low. An aspect that must be highlighted is that in both groups, the experience with artificial indoor temperatures, be it in the working environment, during leisure activities or while using different means of transport is understood as having the ability to change personal definitions of comfort. Several studies have highlighted the influence standardized temperatures can have on creating and legitimizing comfort needs and expectations [4] [5] [6]. As some of the interviewed experts underline, building regulations, even if their main objective is to prevent energy wastage, had had a clear influence in the increased use of equipments to weatherize indoor environments, even in dwellings. This tendency seems to result from a combination of factors: the lower familiarity designers and building contractors seem to have with traditional techniques (that usually receive far less attention during technical training, than sophisticated weatherization systems), the more time consuming task of meeting regulation demands using traditional techniques, the implicit association between indoor air quality and weatherization systems, and also a general idea that weatherization systems are a central element in building a comfortable and modern house.

At the same time, there is another trend that must be highlighted regarding technology evolution, namely, the wider use of heating pumps. Among the interviewed experts it is almost consensual that in Portugal the main challenge regarding indoor temperatures is

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<sup>i</sup> Ecofamílias (eco-families) had as main goals: to analyze the energy consumption of 225 families spread throughout the country, taking climatic zones under consideration, and proposing alternatives to increase each family's energy efficiency. This project was developed by Quercus – Associação Nacional de Conservação da Natureza, an environmental NGO, promoted by EDP Distribuição, and had the financial support of the Portuguese "Plan for efficient consumption" (PPEC), administered by the Portuguese regulatory commission on energy (ERSE)

winter. In summer, except for very specific regions, traditional methods are usually enough to keep comfortable throughout most of the days, especially in houses built more recently. That is why heating represents 21,5% of the total energy use in a Portuguese household, and cooling represents no more than 0,5% [7].

Since families tend to have equipments that either produce heat or cold, the introduction of technology that allows for both valences may lead to its increased use, as has already been seen in other countries [8]. The interviewed families have pointed out that if the infrastructure is available its use is more common. This seems to be a clear example of how a technological innovation, with potential positive impacts on a more efficient use of energy, can have its results hindered by the possibilities it offers to users and the changes it might induce in day-to-day practices aiming at indoor comfort.

As we can see, **material structures** can have a clear influence on household practices. Certain technological solutions, regardless of the contexts in which they can be found, have the potential to induce changes in regular practices, standardizing the use of energy as the normal way to create a comfortable indoor temperature. But this trend may be counterbalanced by **practical understandings** and **embodied habits** that seem to influence a tendency for some of the interviewed families to integrate and value in their daily practices, traditional habits that contribute to less energy intensive heating and cooling practices. The difficulties faced by families to select the right technological solutions in terms of weatherizing equipments or refurbishing the house, that is, the lack of **technical and institutionalized knowledge**, may hinder the chances of making wiser choices in terms of energy efficiency. But if some families highlight the importance to keep a balanced approach when it comes to creating a comfortable indoor environment and seem to be open to the idea of integrating traditional actions to avoid higher energy consumption (for financial or environmental reasons), a comfortable indoor temperature, tends to be highly valued as an element of well being. The **meanings** ascribed by families to the possibility of enjoying a comfortable indoor environment tend to be regarded as a civilizational conquest, a feeling that is shared by most of the interviewed experts and seems to be recognized by the building regulations in use.

## 12. CONCLUSIONS

By combining the four elements that constitute social practices, we try to highlight the importance to consider each element to understand a practice, providing a different theoretical approach where agency and structure interact to structure patterns and practices, shifting the focus on individual choice to a broader approach where public policies and technologies are analyzed also by their “side effects” on “configuring the fabric and the texture of daily life” (p.1281 [9]).

Changes in buildings regulation, in technology development and the widespread use of artificially indoor temperatures are paving the way to the construction of new social meanings and the definition of new social needs regarding indoor comfort, counteracting the efforts to make buildings and technological solutions more energy efficient. But the attractiveness of a comfortable indoor temperature, despite the different meanings attach to it and the different approaches that can be found among the interviewed families, seems to be a stable element. Working towards increased indoor comfort, particularly in a country with mild climate but where most dwellings were poorly planned and built, and poor energy efficiency is

widespread, should include considerations on how such an objective can be achieved without compromising the wider objective of using less energy. For that, understanding the social construction of practices and, foremost, integrating what we already know into planning and designing phases of plans or technology development is fundamental, if the aim is to truly build a sustainable society.

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